Space Weather Forecast

Issued on Tuesday, 27 June 2023 at 01:03 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Isolated R1/R2 Radio Blackouts likely throughout. Slight chance of Minor Geomagnetic Storm day 1 (27 Jun).

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity was Moderate, with an impulsive M1.6 observed at 26/1622UTC originating from a new region in the northeast quadrant. There are up to nine sunspot regions on the visible disc, one of which has recently emerged in the south-eastern hemisphere and remains unnumbered. with two unnumbered. The vast majority are small and stable or slowly decreasing in size and complexity. The largest and most complex group is in the northwest. The new region, in the northeast, continues to develop rapidly in size and complexity, with proliferation of spots on its leading edge and the emergence of multiple umbrae on its trailing edge.

There are numerous filaments (arc of plasma suspended above the surface of the sun) on the disc at present. One of them, on the northwest quadrant, is rather large and needs to be monitored for any lift off. Perhaps the most obvious event was a large prominence (similar to filament) lift-off from the north-eastern limb, which resulted in two separate Coronal Mass Ejections (CME). The first one occurred just before 26/1200UTC, heading north, followed by another one around 26/1600UTC, heading east and resulting in a notable dimming in satellite imagery. Both CMEs have been analysed and although the results are not yet known, these are unlikely to be Earth-directed. At present then, there are no new confirmed Earth-directed CMEs.

Solar Wind / Geomagnetic Activity: The solar wind most likely showed the waning influence of the CME that arrived late on 24 June. The solar wind speed slowly and erratically declined from 550-580km/s to 500km/s. The number of particles within the solar wind were below average. Total magnetic field strength was weak, with no significant deviations in the all-important north-south component. The net effect of the above solar wind measures on the Geomagnetic Activity was Quiet to Unsettled (Kp 2-3).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) has been at background with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is expected to be Low to Moderate, with isolated Moderate-class flares likely.

Solar Wind / Geomagnetic Activity: No Earth-directed CMEs are currently forecast but there is potential for a weak glancing blow on Day 1 (27 June). While the most likely scenario is for the solar winds to slowly decline and the geomagnetic activity to remain mostly Quiet to Unsettled, there is a chance of an Active or even a slight chance of a G1/Minor Storm interval on Day 1 (27 June) under the influence of a glancing blow from a peripheral CME.

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

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Met Office Space Weather Forecast

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is forecast to remain at background with no solar radiation storms occurring. There is a very slight chance of count rates increasing however, if any notable flares occur.

Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	10	5	1	1
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	Yes	50	50	50	50
Very Active	R3 to R5 X	No	5	5	5	5

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	5	5	5	5
Very Active	≥ S3 *	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

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